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Development of a Prior Learning Assessment for Pharmacists Seeking Licensure in Canada

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Prior learning assessment (PLA) has been used to provide an indication of learning acquired through formal educational and unstructured professional experiences. PLA has been used in a variety of professions and trades to complement traditional credential-based evaluations of knowledge and skills. Within the context of pharmacy, PLA is currently being used as a tool to assess the competencies of foreign-trained pharmacists seeking licensure in Ontario, Canada. A competency-based approach moves beyond the traditional prior learning tools (e.g. interviews, portfolios, and transcript reviews) and incorporates performance-based assessment such as the objective structured clinical examination (OSCE). This paper describes the systematic method for developing a structured, competency-based prior learning assessment for foreign-trained pharmacists seeking licensure in Ontario, Canada. Beginning with the identification of critical competency standards, a model for sequential assessment of knowledge, skills and values is presented. Results from a pilot program are presented, suggesting the importance of cultural competency (over and above linguistic competency and in conjunction with a strong declarative pharmacotherapeutic knowledge base) in pharmacy practice.

Keywords: Prior Learning Assessment; Assessment; Pharmacy Education; Professional Education

BACKGROUND

Prior Learning Assessment (PLA) has been described as a systematic process that involves the identification, documentation, assessment and recognition of learning (Poonwassie and Poonwassie, 2001). Most commonly, PLA has been used as a tool to provide an indication of learning acquired through both formal (i.e. structured education) and informal (i.e. unstructured experiences) means (Peruniak and Welch, 2000). As such, PLA recognizes academic credentials and work experience, as well as life experience, independent study, volunteer activities and hobbies (Romaniuk and Snart, 2000).

Advocates of PLA suggest this form of assessment is more holistic and robust than traditional credential-based evaluation, particularly in the context of skilled professions and trades (Aarts *et al.*, 1999). Since practice in the profession and skill trades invariably involves knowledge-in-action or the ability to purposefully, effectively and efficiently apply theory in practice, simple acquisition of an academic credential may not provide an accurate or complete indication of skills, abilities and values evidenced in practice (Belanger and Mount, 1998). Within the adult education context, PLA advocates cite the comparability of alternative routes to expertise as an important reason for adopting PLA systems. For example, a diploma-educated nurse with extensive clinical experience may, in fact, be able to perform at the same level as a baccalaureate educated nurse, despite not having an advanced university-based credential. The combination of college training and experience may result in a comparable level of practice-relevant knowledge, skills and values as a university-based education (Droegkamp and Taylor, 1995).

PLA has been used widely in the training and colleges sectors in North America, particularly as a diagnostic tool to assist adult learners in identifying personal learning needs (Aarts *et al.*, 1999). Traditional education and training in professions

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and trades is rooted in a variety of assumptions (Berryman, 1998) such as:

(1) Learners are novices with little or no experience in their chosen field,
(2) Learners are blank slates upon which the knowledge, skills and values of their field may be inscribed,
(3) Learners have little or no relevant life experience that will affect learning,
(4) Learners are able to devote most, if not all, of their youthful time and energy to the acquisition of knowledge, skills and values and
(5) Learners benefit from a one-size-fits-all curriculum since they enter an educational program at approximately the same basic level of knowledge, skills and values.

Clearly, with dynamic changes in the workplace occurring, such assumptions are not universally applicable. In an environment of continuous professional development and life-long learning, education methods premised on such assumptions may prove to be inadequate for learners and for professional practice. As people choose to access education in professional or skilled trades at different points in their lives, the notion of an 18-year old high-school graduate as the "raw material" of professional development is no longer tenable. Today, in most professional schools, students represent a broad and diverse group of individuals, each with unique, learning needs. Traditional educational models that assume homogenous student populations do not adequately address this reality, nor do they optimize use of educational resources to benefit individual learners (Evans, 2000).

In this environment, PLA has emerged as an important triaging tool, one that allows opportunity for educators to discern their individual student's strengths and challenges and potentially customize educational programs to meet these needs. As a diagnostic tool, PLA may be compared to credential-based evaluation, wherein paper-based records (e.g. degrees, diplomas, transcripts, portfolios and other academic or work-related documentation) are reviewed by impartial experts who then make judgments regarding the adequacy of previous academic and non-academic experience for the current situation. In some cases, PLA may be used as a tool for allowing students to exempt out of formal academic requirements since the combination of previous schooling and experience has provided adequate assurance of knowledge and skills acquisition.

Traditionally, PLA has been used as a paper-based, criterion-driven, impartial review of written documentation. Such an approach may have the advantage of being seen as objective, neutral and standardized, with little opportunity for subjectivity or bias. For example, individuals who have been educated in one jurisdiction but seek transfer to a new one are invariably asked to submit paper records to "prove" their educational status and these records are compared on the basis of statistically derived norms and standards.

While an important tool for educators, such an approach to PLA may be incomplete and inadequate, particularly in the context of professions and trades where competency-knowledge-in-action is a significant concern. With the emergence of reliable and valid performance-based assessment tools (such as the objective structured clinical examination or OSCE) it is possible to expand PLA beyond simple paper-based review and towards a more fulsome, competency-based approach.

PLA should, ideally, possess the following attributes (Aarts *et al.*, 1999):

(1) Complement paper-based assessment with direct assessment methods,
(2) Direct assessment methods should be reliable, valid and competency-based,
(3) Competencies should be standards-based, not norm-referenced,
(4) Assessment should be based on the principle of multiple measurements over multiple time periods involving multiple observers, to optimize objectivity and reduce personal and temporal biases,
(5) It should be constructed to assess and recognize both formal and informal learning in a culturally sensitive and appropriate manner and
(6) It should be systematic in identifying, evaluating and recognizing learning.

The need for a competency-based PLA has emerged within the profession of pharmacy. For example, in the United States, PLA is used by 84% of non-traditional Pharm.D. programs to assess the knowledge and skills of baccalaureate-educated pharmacists seeking additional upgrading education. In this context, the most commonly reported PLA tools utilized are transcript review, faculty-developed examinations and professional practice portfolios (Fjortoft and Zgarrick, 2001).

In the province of Ontario (Canada's largest province, home to approximately one-third of Canada's 32 million citizens), there is an unusually high reliance on foreign-trained pharmacists. Each year, approximately 50% of all new pharmacists licensed in Ontario received their education and training from outside North America. (Within North America, there exists a system of accreditation of pharmacy education programs, and while local [i.e. state or provincial] regulations apply, in Canada most provinces accept the degree from another

accredited North American school of pharmacy as an equivalent.) Within the province of Ontario, more than 25% of all licensed pharmacists are foreign-trained.

This reliance on foreign-trained pharmacists is unique in North America; no other jurisdiction has such a high percentage of international graduates as part of the professional practice. Recognizing the substantial differences—and similarities—in pharmacy education, training and practice around the world (and the need to ensure public protection with respect to pharmacists' services) competency-based PLA has been discussed as a more appropriate vehicle for establishing comparability of learning than existing, paper-based methods. As a result, in 2002, a pilot project to develop a competency-based PLA program for foreign-trained pharmacists seeking licensure in Ontario was launched.

PURPOSE

The purpose of this pilot study was to evaluate the feasibility and outcomes of a competency-based prior learning assessment program for foreign-trained pharmacists seeking licensure in Ontario. Within this context, PLA would be used for two major purposes. Primarily, it would serve to identify the competency level (both pharmacy-related and language-related) of each candidate. Secondly, it would assist educators and academic counselors in identifying the learning needs of each individual. Based upon results of this pilot, it may be possible in the future for individuals who demonstrate levels of competency that meet or exceed standards to gain exemption from certain educational requirements. For the purposes of this study, outcomes were defined in their psychometric sense; in particular, the reliability and validity of the assessment is of great interest.

METHODS

A systematic method for developing the PLA was adopted. This method consisted of the

(1) Identification of Competency Standards,
(2) Determination of Critical Competencies and Standards,
(3) Development of a PLA Model,
(4) Design, development and review of individual test stations and items and
(5) Identification of Competency Standards.

Within a regulated health profession such as pharmacy, there is a need for clear articulation of standards of practice. In Canada (given the federal structure of government and the self-regulated nature of professional practice), a variety of competency documents have been developed. Though slightly different in orientation, all competency documents focus on the pharmacist's role as a patient care provider.

The National Association of Pharmacy Regulatory Authorities (NAPRA), the umbrella organization representing participating pharmacy licensing and regulatory bodies from across the country, has developed the document "Competency Standards for Entry-to-Practice Level Pharmacists in Canada." The Association of Faculties of Pharmacy of Canada (AFPC), the umbrella organization representing all nine accredited university-based pharmacy education programs in Canada, has developed the document "Outcomes of the Baccalaureate Degree Program in Pharmacy." In the province of Ontario, the Ontario College of Pharmacists (OCP), the licensing and regulatory body for pharmacy practice in the province, has developed a "Standards of Practice" for all pharmacists wherein minimal expectations regarding professional practice are described.

Each document is slightly different in focus. For example, the AFPC document describes competencies in terms of outcomes of an educational program only (i.e. after completion of a bachelor's degree in pharmacy, but before completion of a required in-service or pre-registration period). The NAPRA document describes competencies expected of an individual who has completed both a required educational program and the in-service/pre-registration period. The OCP document describes competencies expected of an individual who has completed the required educational program, the required in-service/pre-registration training period, as well as all other requirements for licensure (such as a provincial jurisprudence examination). In reviewing these various documents, it is clear that substantial similarities exist and that competencies are defined in a similar manner: the knowledge, skills and values necessary for the pharmacist to deliver patient-centered pharmaceutical care. Given the development process of each of these documents, along with the collaboration and input provided by all pharmacy organizations during this process, it is not surprising that such similarity exists.

Determination of Critical Competencies and Standards

Based on these documents, a summary list of the key knowledge, skills and values necessary to meet competency standards was developed (Table I). This list describes the domains required to demonstrate competency and, in essence, forms the skeletal blueprint of the Prior Learning Assessment process.

TABLE I Knowledge, skills and value domains for foreign-trained pharmacists

Knowledge (both declarative and tacit):
1. Technical (literacy, numeracy, computers)
2. Procedural (jurisprudence, information storage and retrieval, prescription processing)
3. Scientific (bio-pharmaceutical and medical sciences)
4. Pharmacotherapeutic
5. Psychosocial (determinants of health)
6. Administrative (operations and practice management)
7. Ethical (healthcare systems, professional code of ethics)

Skills
1. Self-Regulation (time management, organization, self-assessment, ethical reasoning)
2. Critical Analysis Skills (literature evaluation and application to practice)
3. Linguistic/Communicative (functional oral and written communication)
4. Patient Care (counseling, patient interviewing, patient dialogue, pharmaceutical care)
5. Practice Management (team-work, flexibility, adaptability, professionalism)

Attitudes
1. Epistemic Agency (desire and ability for life-long learning)
2. Professional Accountability (responsibility for patient and practice outcomes)
3. Citizenship (as a professional and as a member of the community)

Based on this, individual stations and items could be constructed in order to assess competency.

One unique and particular complexity of this process relates to the specific candidates involved in this PLA process. Since this PLA was being designed to assess competency among foreign-trained pharmacists, there were significant concerns regarding linguistic and communicative competency. Anecdotal feedback from pharmacy educators and regulators suggested that a significant barrier to demonstration of competency may be related to English-language communication, not to underlying knowledge base deficiencies. Given the complexity and linguistic demands of pharmacy practice, the issue of communicative competency formed an over-arching, superordinate category for assessment. For this reason, competency-based PLA is particularly well suited to the purpose of assessment of individuals for whom English is not a first language; traditional paper-based PLA methods may not provide adequate opportunity to assess communicative competencies as they relate to professional practice.

Development of PLA Model

While the blueprint described the knowledge, skills, values and communicative competencies that needed to be tested, it did not provide a model for actually structuring an assessment process. Numerous assessment models have been proposed and used in competency evaluation (Belanger and Mount, 1998; White, 1995). Most of these models are premised on the need to make cut-score decisions only (i.e. pass versus fail or meets-standards versus fails-to-meet standards). The discerning power of a PLA process must be somewhat greater and must be able to explain why an individual passed or failed, not simply that they passed or failed. As a result, a somewhat different assessment model is required, one that would provide a more accurate diagnosis of educational needs, in addition to establishing whether or not standards have been met.

Initially, a four-tier model of PLA was developed (Table II). This model is unique in that it situates Language of Practice at the core of assessment. Recognizing the linguistic and communicative challenges faced by many foreign-trained pharmacists and the lack of sensitivity and specificity of generic English language testing systems

TABLE II Tiered model for prior learning assessment for foreign-trained pharmacists

Tier	Description	Elements for assessment
1	Licensure pre-requisites	Fluency requirements (minimum score of 580 on Test of English as Foreign Language or equivalent) Transcript-based evaluation of comparability of academic preparation Verification of immigration status
2	Language of practice	Reading at a professional level Writing at a professional level Speaking at a professional level Listening at a professional level Integrative communicative competency
3	Pharmacy practice procedures (technical skills and competency)	Pharmacy law (jurisprudence) Dispensing procedures Prescription evaluation (including application of pharmacy math skills)
4	Clinical skills	Patient counseling Patient interviewing and medication history taking Identification and resolution of drug related problems Pharmaceutical care

TABLE III Standards of practice for pharmacists in Ontario, Canada

Standard 1:	The pharmacist, using unique knowledge and skills to meet a patient's drug-related needs, practices patient-focused care in partnership with patients and other healthcare providers to achieve positive health outcomes and/or to maintain or improve quality of life for the patient
Standard 2:	The pharmacist practices within legal requirements and ethical principles, demonstrated professional integrity and acts to uphold professional standards of practice
Standard 3:	The pharmacist identifies, evaluates, interprets and provides appropriate drug and pharmacy practice information to achieve safe and effective patient care
Standard 4:	While respecting the patient's right to confidentiality, the pharmacist communicates and educates to provide optimal patient care and promote health
Standard 5:	The pharmacist, in collaboration with the designated manager or hospital pharmacy manager, manages drug distribution by performing, supervising or reviewing the function of selection, preparation, storage and disposal of drugs to ensure safety, accuracy and quality of supplied products
Standard 6:	The pharmacist applies knowledge, principles and skills of management as they pertain to the site of pharmacy practice, with the goal of optimizing patient care and inter-professional relations

(such as the TSE [Test of Spoken English] or the TOEFL [Test of English as a Foreign Language], both of which test general English language proficiency, not pharmacy-specific language use), Tier II is seen as fundamental to the practice of pharmacy. The communicative and linguistic demands of pharmacy practice are substantial, since virtually all patient assessment and data collection and interpretation in pharmacy is based on speaking, writing, reading or listening.

The tiers in this model presumed a hierarchical sequence of knowledge and skills development; an individual who was unable to meet standards at Tier II would not be able to demonstrate standards at Tier III or IV. Conversely, an individual who met standards at Tier III would be able to meet standards at Tiers I and II, but not at Tier IV.

Each tier builds upon knowledge and skills at the previous level; consequently, it is not possible to "skip" tiers. For the purposes of this assessment, Tier IV competencies were those defined by the Standards of Practice for practicing pharmacists in Ontario (Table III).

Development of Test Items/Stations

Having developed a blueprint and a model, the work of developing items and assessment tools was undertaken. Within the academic, regulatory and practice communities, there was already expertise and infrastructure in development of pharmacy-specific items (i.e. those at Tier III and Tier IV). Based on the blueprint and model, the following items were developed:

(1) A five-station clinical simulation assessment (seven minutes-per-station and two minutes between each station to allow for travel time and an opportunity to read a prepared stem providing case-specific background information) involving interactive, simulated-patient driven cases depicting standard pharmacy practice situations,
(2) A two-station (seven minutes-per-station) interactive verbal (telephone) assessment wherein candidates would respond to typical telephone-based activities in a pharmacy setting (e.g. transferring prescriptions, accepting new prescriptions from prescribers, responding to verbal drug-information requests, etc.),
(3) A two-station (10 min-per-station) non-interactive written drug information response assessment, wherein candidates would be provided with a written drug information request/problem and standard pharmacy reference texts and would be expected to research, formulate and write an appropriate response,
(4) A two-station (10 min-per-station) non-interactive prescription-checking post, wherein candidates are expected to check and locate errors (if any) in prescriptions previously filled by a technician. Candidates are instructed to look for technical dispensing errors only, not for pharmacotherapeutic errors,
(5) One (10 min) non-interactive pharmacy calculation station, wherein candidates would be asked to complete a series of pharmacy calculations in response to word problems and
(6) Three self-assessment stations (7 min) wherein candidates would be provided with the same assessment instruments as are used by examiners in interactive stations and are asked to self-assess performance.

Specific items for each of these stations were developed, reviewed and had minimum performance level standards set using established procedures and infrastructure for item development. Cohorts of case writers and reviewers had previously been trained and had experience in item development through other processes that utilize such items.

The development of Tier II (Language of Practice) items posed unique challenges. While the infrastructure and methods for developing items for Tiers III and IV were already well established in the academic and regulatory communities in pharmacy, there was little or no expertise or experience available in development of linguistic and communicative competency items with sufficient discerning power

for a PLA process. Existing assessment tools, though reliable and valid in a generic context, were neither applicable nor possessed sufficient discriminatory power to be used in a pharmacy practice context. A linguistic consultant was contracted to identify specific, unique communicative demands in pharmacy practice. Examples of such demands include the ability to discern (both listening and reading) between similar sounding or spelled drug names (such as "Lasix" and "Losec"). While such an exercise is generally not needed for English first-language speakers (the patterns both aurally and in writing are sufficiently dissimilar for native speakers), it is of critical significance for non-native speakers.

As a result, a series of items were developed to assess communicative competency at the Tier II level. Specific competencies to be assessed included reading comprehension, writing, listening and speaking. Three specific one-hour stations, each unique to pharmacy communication competencies, were developed:

(1) *Writing Assessment*: Three questions or tasks are presented, each varying in complexity and length. Candidates are required to respond appropriately in writing,
(2) *Reading Assessment*: Two reading comprehension passages are presented; candidates are required to respond appropriately (combination of multiple choice questions and short answer) and
(3) *Verbal Assessment*: Two short patient cases are presented, neither of which requires any sophisticated or specific pharmacotherapeutic knowledge.

Candidates are provided 10 min to formulate a verbal response, including a justification of their reasoning. They are then provided with 20 min to present, justify and defend their response to an examiner who is provided with a set of standardized questions.

Assembling the PLA

In order to fully address the blueprint and adequately assess competencies, all components cited above were required. Since the mandate of PLA is different than other forms of competency-based assessment (i.e. PLA must do more than simply make a "pass–fail" decision; it must also include a diagnostic and prescriptive component), such an extensive model was required. In assembling the various stations and items (and allowing for sufficient rest-stations to ensure candidates and examiners were not burned-out by the process), it became clear that a full day of PLA testing would be required.

Recruitment and training of examiners is an integral part of any performance-based assessment. For all interactive stations, pharmacists were recruited from a variety of practice settings (community, hospital, industry, etc.) to ensure as broad a representation of the profession as possible. Specific attention was paid to ensure a representative balance of male and female assessors, of those assessors who were educated in North America and those from outside North America and of a variety of years of experience. Training of assessors was provided to ensure adequate understanding of performance-based assessment principles and to standardize use of global communication rating scales. In total, more than 25 assessors (both pharmacists and non-pharmacist English-as-a-second-language experts) participated in the PLA pilot.

Candidates for the pilot PLA were recruited from the ranks of foreign-trained pharmacists enrolled in the University of Toronto's International Pharmacy Graduate (IPG) program, a university-based program that provides bridging education for foreign-trained pharmacists seeking licensure in Canada. Candidates who had enrolled in the program were invited (on a non-randomized, first-come, first-served basis) to participate in the pilot. An orientation program and package was provided to candidates, wherein specific PLA terms, methods and objectives were reviewed. In addition, an introductory face-to-face session was scheduled to answer questions and allay concerns. In total, 30 candidates participated in the PLA pilot.

Following the full-day administration of the pilot, PLA coordinators collected and collated assessment instruments and produced individualized reports for each candidate's performance. Results were reported individually (and confidentially) to candidates; aggregate data was reported to the IPG program and to the profession at large.

RESULTS

A total of 30 candidates representing pharmacy graduates from 11 countries participated in the pilot administration of the Prior Learning Assessment. Given the selection process for participation in the pilot, this group cannot be viewed as necessarily representative of foreign-trained pharmacists seeking licensure in Canada. While a total of 52 individuals had enrolled in the program, space and resource constraints dictated a maximum of 30 candidates for the PLA itself; selection for participation was based on a "first-come, first-served basis." As a result, the sample group used for the pilot demonstrated a higher degree of motivation and interest than most foreign-trained pharmacists.

All 30 candidates completed all stations of the PLA as outlined above, though not necessarily in the sequence described. The logistics of performance-based-testing dictate that candidates must rotate through a series of stations; consequently, one candidate may begin the PLA at an OSCE station while another candidate may begin at a non-interactive prescription checking station. The effect of sequencing and starting station location on overall candidate performance has not been adequately assessed despite anecdotal feedback from some candidates that such differences may affect overall performance.

Performance on the Interactive Stations

The five-station interactive OSCE utilized stations and assessments previously developed and validated for the Ontario College of Pharmacists' Quality Assurance and Peer Review process for assessing maintenance of competency in practicing pharmacists (Austin *et al.*, 2003 [in press]). Each station is designed to assess competency as defined by the Standards of Practice for the profession. Consistent with the use of these stations in the Quality Assurance Process, scoring is based on both global (holistic) and analytical (checklist) scales. For the analytical scales, minimum performance levels (MPL) were established with a modified Ebel method approach using MPLs results. These results then identified a "cut score," a minimum threshold for defining pass or fail decisions. Consequently, performance in the OSCE component of the PLA is criterion-referenced, not norm-referenced.

Previous experience with these stations illustrated that inter-rater reliability coefficients were low (<0.60) when standardized patients are used as assessors in the pharmacy OSCE context. Consequently, standardized patients were not used as assessors, although they were given an opportunity to provide formative feedback to candidates.

All stations were either video-taped or audio-taped to provide English-as-a-second-language tutors with an opportunity to review performance and provide feedback to candidates. This feedback was not, however, used in calculation of cut-scores or in making pass–fail decisions. All pharmacist-assessors involved in the OSCE were familiar with performance-based assessment in another context (either through work as instructors at the University, as assessors with the OCP Quality Assurance Program or as assessors for the Pharmacy Examining Board of Canada's entry-to-practice OSCE). Nonetheless, a formal orientation session for assessors was provided and practice cases were used for training purposes.

Across all 30 candidates, performance on the OSCE varied considerably, with an average number of stations passing 1.46 out of a total of five stations. Twenty percent of candidates (6/30) were unable to meet standards of practice in any of the five stations. For these candidates, linguistic barriers appeared most significant; performance on global rating scales for verbal skills, non-verbal skills, degree of logic, focus and coherence and empathy were consistently in the lowest percentile for all these candidates. There was a strong correlation (Cronbach's alpha) between performance on the global scales and on the analytical scales ($\alpha = 0.85$) for those candidates who failed all five stations.

Sixty-seven percent of candidates (20/30) were able to meet standards of practice in one, two or three stations. For these individuals, there was a moderate correlation between performance on global scales and on analytical scales ($\alpha = 0.62$). When further divided into groups based on number of stations passed, moderate correlations were found: ($\alpha = 0.65$, $\alpha = 0.61$ and $\alpha = 0.63$ for those passing one, two or three stations, respectively).

Thirteen percent of candidates (4/30) were able to meet standards in four or all five stations. A strong correlation between performance on global and analytical scales was present for these individuals ($\alpha = 0.82$).

In addition to the five station OSCE using simulated patients, two additional interactive stations involving pharmacists as "standardized physicians" were used. Though less interactive than the patient-care cases depicted in the OSCE, these stations provided an opportunity for the assessment of telephone-based skills (e.g. receiving prescriptions, communicating information, etc.). Global assessments were used in these stations since the task involved was relatively straightforward and could be evaluated bi-modally ("Correct" or "Incorrect"). With only two stations, reliability coefficients within these telephone stations was not calculated; however, reliability between global assessment in the telephone stations and the simulated patient stations was calculated across all 30 candidates ($\alpha = 0.61$) as well as for candidates meeting standards in four or five stations ($\alpha = 0.62$), one, two or three stations ($\alpha = 0.59$) and in no stations ($\alpha = 0.60$).

Two additional interactive stations were developed using a traditional "oral examination" model. In these stations, candidates were provided with a therapeutic problem and supporting literature and were then required to make a recommendation and provide justification for their decision to a pharmacist-assessor. Given the iterative nature of this examination format, standardization of responses for an analytical checklist was not possible; global assessment was used. There was a moderate correlation between performance on the OSCE global performance scale and performance in the oral

examination stations across all candidates ($\alpha = 0.61$). The correlation was most marked ($\alpha = 0.66$) for candidates who met standards in one, two or three stations and least marked ($\alpha = 0.54$) for candidates who did not meet standards in any stations, suggesting that the oral therapeutics examination format may be dissimilar to the OSCE format.

Performance in Non-interactive Stations

A series of stations were developed to assess competency in specific skills related to pharmacy practice, such as drug information (searching, retrieval, evaluation and reporting), numeracy and accuracy of prescription checking. Within, candidate performance varied considerably across all three sets of stations.

In the calculations component of the PLA, candidates were asked to complete basic pharmacy mathematics based on word problems. These tasks required individuals to accurately identify the problem (based on a pharmacy practice scenario), develop a mathematical approach to solving the problem and accurately calculate an answer.

There was a strong correlation ($\alpha = 0.88$) between performance on the global assessment in the OSCE stations and performance on the calculations component of the PLA. Qualitative analysis of results suggests that difficulties in interpreting word problems may have resulted in individuals inaccurately stating or framing the mathematical problem rather than any significant errors or problems with the calculations (or mathematics) themselves. Forty-three percent of candidates (13/30) successfully completed the calculations component of the PLA.

Performance in the drug information station also correlated with performance on the global assessment of the OSCE component ($\alpha = 0.78$). Typically, responses to these drug information requests were short answer or point form, rather than formal written English. The assessment focused less on English language proficiency and more on accuracy of information communicated (though the two are related). Across all 30 candidates, the average score was 5.01/10 (± 1.77) using a standardized marking scheme previously developed and validated. Once again, the ability to state or frame the drug information question appeared to be the most significant hurdle for most candidates; those who successfully framed the drug information were most frequently able to retrieve citations or resources necessary for solving the problem.

Performance in the prescription checking stations varied considerably among all candidates, with no discernible correlation between performance on any other PLA component. Across all 30 candidates, the average score was 4.24/10 (± 2.45).

Performance on Tier II Components (Linguistic Competency)

A variety of different assessment methods were used to evaluate candidates' English language skills in reading, writing, listening and speaking. Experts in design of assessment for English language skills were contracted to develop and validate tools, recruit and train linguistic assessors (not pharmacists) and provide guidance to assessors during the PLA.

Assessment for Tier II components utilized the well-established Canadian Language Benchmarks, a tool for evaluating the level of competency in a variety of English language tasks using Canadian English conventions. The CLB is a unique, made-in-Canada system and represents the unique features of Canadian English vis-à-vis English language conventions of the United States or the United Kingdom. Modifications to the existing CLB framework were developed to account for the specialized nature of communicative demands in pharmacy practice.

The CLB provides anchors and behavioral descriptors across four domains of communication performance: speaking, listening, writing and reading. Within each domain, there are 12 performance levels or bands. Unpublished study data commissioned for the IPG program suggests that, for safe pharmacy practice at the level of expectation outlined in the Standards of Practice, individuals should be operating at a level of nine or better across the speaking and listening domains and a level of eight or better across the writing and reading domains. When interpreting the following results, it is important to note that all candidates who participated in this pilot had already successfully met minimum fluency requirements of the Ontario College of Pharmacists, as defined by commercially available testing units such as the TOEFL, TSE or TWE.

Overall performance across all three candidates varied considerably. On average, candidates performance across the assessment domains were: speaking: 8.02 (± 1.59), listening: 7.45 (± 1.98), reading: 6.68 (± 1.77) and writing: 7.01 (± 1.69). All scoring was completed by two independent raters trained for the assessment of linguistic competency. Inter-rater reliability coefficients were acceptable, though on the low side for some of the domains: speaking ($r = 0.67$), listening ($r = 0.69$), reading ($r = 0.77$) and writing ($r = 0.82$).

Candidate performance varied significantly, although correlations emerged between performance in various Tier II components and performance on Tiers III and IV of the PLA. There was a strong correlation ($\alpha = 0.86$) between performance in the speaking assessment and performance across all five OSCE stations and a strong correlation between

the speaking assessment and performance in the telephone stations ($\alpha = 0.82$). However, the correlation between performance on the speaking assessment and the oral therapeutics assessment was considerably weaker ($\alpha = 0.52$).

Moderate correlations were noted between the listening assessment and performance across all three interactive stations types: OSCE ($\alpha = 0.74$), telephone ($\alpha = 0.77$) and oral therapeutics ($\alpha = 0.76$). Variable correlations were found between the reading and writing assessments across the three station types: OSCE ($\alpha = 0.67$), telephone ($\alpha = 0.62$) and oral therapeutics ($\alpha = 0.79$). The strongest correlation between Tier II and Tier III/IV PLA was noted between the reading and writing assessment and the Written Drug Information (Essay-style) ($\alpha = 0.88$).

DISCUSSION

The logistic and cost demands for mounting such a comprehensive prior learning assessment were daunting. It is estimated that the cost, per candidate, is approximately CDN $1800, excluding costs for developing OSCE stations. As a result, the feasibility of on-going prior learning assessment of this nature is of significant concern. The single largest expense for the PLA was the cost of stipends provided to pharmacist-assessors and English-language-assessors. Additional major costs included simulated patients.

Fortunately, the data from the pilot administration suggest it may be possible to restructure this assessment while retaining significant advantages of prior learning assessment. In interpreting these data, however, it is important to note that the sample size was relatively small (only 30 candidates), the sample was not representative of all foreign-trained pharmacists seeking licensure and several correlation coefficients were calculated with such small numbers that confounding variables are a potential concern.

It is, of course, important to recognize the role of PLA in the International Pharmacy Graduate program. Its purpose is to provide instructors with an indication of baseline knowledge and skills of candidates and a basis for the construction of an individualized learning plan drawing upon a variety of academic and non-academic resources. Success on the PLA does not presage success on licensing examinations or in other high-stakes processes. Consequently, the psychometric burden for PLA is somewhat less than it may be for other forms of assessment.

The data suggest a correlation between communicative competency and the ability to successfully identify and resolve patients' drug related problems. On the surface, this is not necessarily a surprising finding; clearly, pharmacy practice requires a high degree of facility with language. Unlike most other health professionals, pharmacists must undertake virtually all their assessment and intervention through speaking, reading, writing and listening. In North America, pharmacists (generally) do not have a scope of practice that permits or encourages other forms of objective physical assessment (such as manipulation, auscultation, ordering of laboratory tests, etc.). In general, pharmacists observe, ask questions and make recommendations to patients.

The strength of the link between communicative competency and the ability to provide care to patients is seen in the consistently high correlation between various components of the PLA, in particular in the OSCE stations and telephone stations. Of interest, however, is the finding that the correlation is somewhat weaker for the oral therapeutics examination. This suggests that many candidates may possess a high degree of declarative knowledge but an inadequate degree of procedural knowledge.

This finding is of significant interest insofar as it illustrates the significant cultural demands of pharmacy practice. Thus, it may be important to distinguish between "communicative competency" and "cultural competency," the former being a technical ability and the latter being an interpersonal skill. Given the interpersonal dimensions of healthcare in general (and of pharmacy practice in particular), this distinction is vitally important (Zweber, 2002). Demonstrating a moderate to high degree of declarative knowledge suggests individuals are able to communicate what they know in a non-practice setting. The inadequate degree of procedural knowledge demonstrated by many candidates may reflect lack of familiarity with the customs of Canadian healthcare or Canadian social discourse, not a fundamental lack of pharmacy knowledge or skills. It is important to note that all candidates in the pilot had met or exceeded minimum fluency standards as assessed by widely-accepted standardized tests such as TSE and TOEFL.

A major finding of this research is the inadequacy of generic English-language proficiency assessment tools (such as the Test of English as a Foreign Language [TOEFL]) in providing assurance of cultural or communicative competency in pharmacy practice. This is of significant interest since, heretofore, these generic assessments have been relied upon to provide such assurance. The development of pharmacy-specific linguistic, communicative and cultural competency assessment instruments is an important outcome of this research; further study is required to elaborate the place of such instruments in the overall licensure process for foreign-trained pharmacists in Canada.

The issue of "cultural competency" in pharmacy practice has not been adequately addressed or explored, but it appears to relate to the lack of procedural knowledge demonstrated by most candidates in the PLA pilot. At its most obvious, this lack of procedural knowledge manifests itself in poor performance in the "prescription checking" stations. This poor performance is not surprising given the fact that many of the candidates had little or no experience in Canadian pharmacies and consequently were simply unaware of the "rules" for safe medication practices.

The extent to which this applies to other realms of practice involving patient care requires further investigation. The system of licensure of foreign-trained professionals (including pharmacists) in Canada is tacitly premised on a belief that linguistic competency and procedural knowledge will evolve sufficiently within a reasonable period of time to ensure safe and effective professional practice. Explicit attempts to define and measure profession-specific cultural competency have not been undertaken given potential bias and subjectivity concerns. Nonetheless, data from this pilot appear to support the notion that cultural competency is part of professional practice in pharmacy and that assessment of such competency ought to be an important part of the pre-registration and licensure processes for foreign-trained pharmacists.

CONCLUSIONS

Prior Learning Assessment is an important component of pharmacy education and training, particularly when dealing with a diverse learner population. One-size-fits-all education models and methods are clearly inappropriate, inefficient and ineffective for some cohorts of learners. At its best, prior learning assessment can provide an accurate diagnosis of educational needs and point towards a prescription for both knowledge and skills upgrading.

Traditionally, prior learning assessment has been paper-based, often involving credential or experience comparisons. In some circumstances, informal or unstructured interviews are used in an attempt to gauge skills. Within the context of skilled professions and trades, neither model is fully acceptable since public safety and protection demands an adequate level of competency be proven-and provable. A model for competency-based PLA builds on the strengths of traditional PLA but complements it with a more rigorous set of assessments.

Within the profession of pharmacy, a competency-based PLA model and process have been developed for the purpose of assessing knowledge, skills, values and competencies of foreign-trained pharmacists seeking licensure in Canada. Results from the pilot administration of this PLA have been encouraging and support the notion that competency-based PLA is an appropriate tool for recognizing both formal and informal study, work and life experience and knowledge, skills and values. The PLA process is systematic and assessment outcomes are reliable and valid.

There are significant logistical, organizational and operational challenges associated with the development and deployment of a PLA process; nonetheless, the value of this process is important and efficiencies in operating this form of PLA can be developed. Further development in refining assessment methods, assessment tools and administrative procedures is required in order to more fully establish and quantify the value of this process.

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